AR-B5230 Series CPU Board

EPIC form factor, onboard VGA, LVDS with DDR2-SODIMM
Built in two LAN, CF type-II

Edition**: 1.4**
Book Number: AR-B5230 Series-09.07.02

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1 INTRODUCTION

Welcome to the AR-B5230 Series (5230/5231) EPIC board. The AR-B5230 Series (5230/5231) incorporates the advanced Intel® 915GME(5230)/910GMLE(5231) Chipset. It supports the Pentium M and Celeron M processors, while coming with a 400MHz Front Side Bus.

1.1 Specifications

CPU: Socket for Intel uFC-PGA 478 for Pentium M, Celeron M, Coolers required
Support CPU type:

- CM-0.6G/400/512K/BGA(AR-B5231)
- CM-1.0G/400/0K/BGA(AR-B5231)
- CM-1.3G/400/512K/PGA(320)
- CM-1.5G/400/1M/PGA(370)
- PM-1.6G/400/1M/PGA
- PM-2.0G/533/2M/PGA(760)
- PM-1.8G/400/2M/PGA(745)

BIOS: AWARD
System Chipset: Intel 915GME(5230)/910GMLE(5231) + ICH6M
Syetem Memory: One SO-DIMM socket support 400/533MHz(5230) 400MHz(5231) DDR2 SDRAM up to 1GB
Graphic controller: Internal Intel 82915GME(5230)/82910GMLE(5231) integrated GMA 900 graphic controller
VGA Memory: Intel DVMT 3.0 supports Max 128 MB shared video memory
Display mode:

- CRT (always on)
- DVII
- LCD : Dual Channel 18-bits LVDS Interface

Audio: AC'97 Audio out/Audio in/Mic in
Ethernet:

- Intel 82562EZ 10/100Mbps LAN PHY
- Intel 82541PI Giga LAN controller

Storage:

- One PATA
- One SATA
- One CF: Compact Flash Type-II support UDMA

Serial port:

- One RS232 (COM1)
- One RS232/422/485 (COM2)
- Two RS232 (COM3, COM4)

USB:

- Two external ports
- Two internal ports

PCI-104 slot:
PS/2: One PS/2 connector for keyboard and mouse
GPIO: 8 bit GPIO
Watch dog: Software programmable 1~63 Seconds
Hardware monitor:

- CPU voltage
- CPU and System temperature

CPU/System Fan speed control:

- AT : 12V single voltage input (BIOS default)
- ATX: Power switch pin header and pin header for external 5VSB input

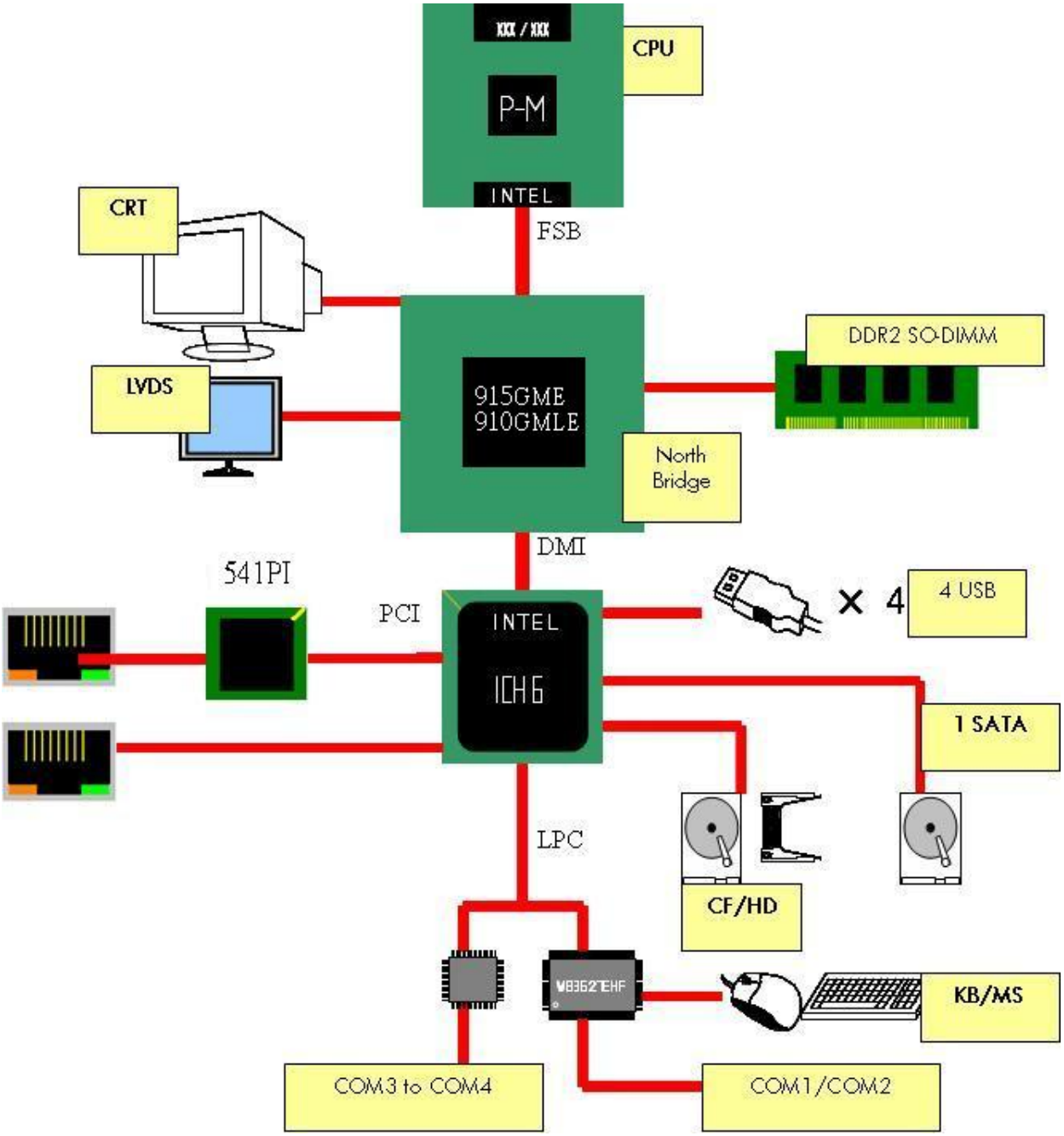
Battery: Lihium Battery, 3V/220mAH
OS: Win XP, Win XP Embedded, Win CE, Linux
Dimension: 115mm x 165mm (4.528 x 6.496 inches)
Operating Temperature: 0~60^{o}C (32~140^{o}F)
Storage Temperature: -20~80^{o}C (-4~176^{o}F)
Relative Humidity: 0 to 90% @ 40°C, non-condensing (95% @ 40°C, Non-Condensing by request)
EMC: CE, FCC Class A

1.2 What You Have

Before you begin to install your AR-B5230 Series (5230/5231) board, please make sure that the following items are inside the AR-B5230 Series (5230/5231) package.

- The quick manual x1
- AR-B5230 Series (5230/5231) board x1
- Software utility CD x1
- Fan module x1
- Power cable for AT x1
- Power cable for ATX x1
- COM port cable x2
- KB/MS cable x1
- 40/44 pin IDE connector x1
- USB cable x1
- Audio cable x1
- SATA cable x1
- TV out cable (AR-B5230SD only) x1

1.3 Block Diagram

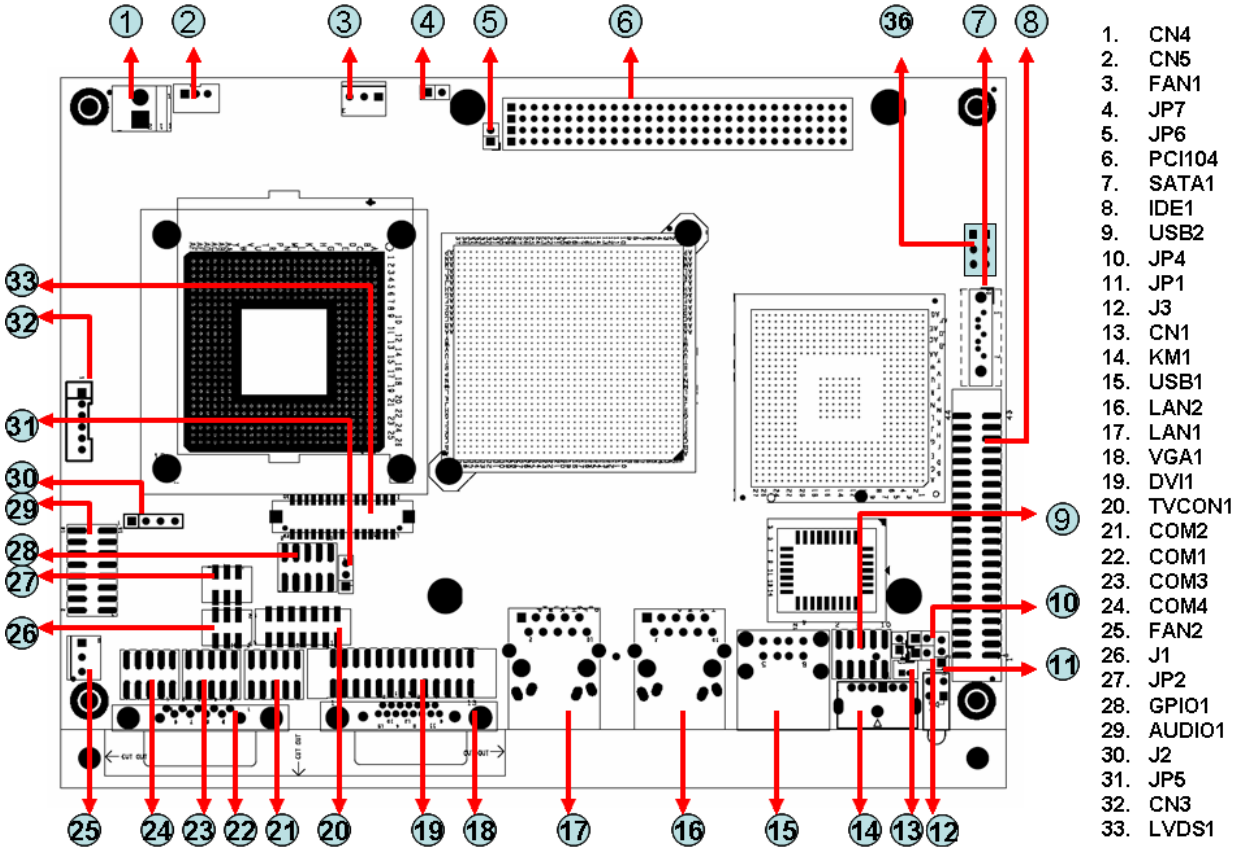


2 INSTALLATION

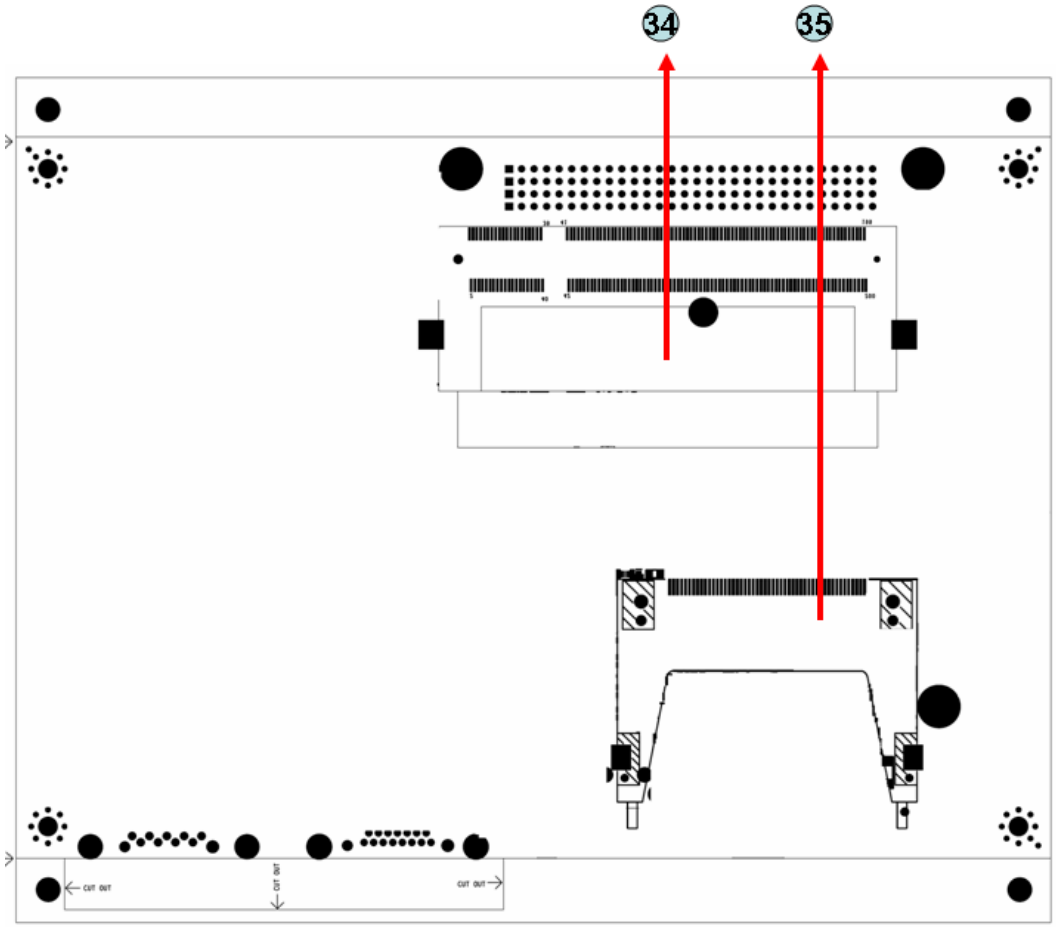
This chapter describes the installation of AR-B5230 Series (5230/5231). At first, it shows the Function diagram and the layout of AR-B5230 Series (5230/5231). It then describes the unpacking information which you should be careful with, as well as the jumper/switch settings for the AR-B5230 Series (5230/5231) configuration

2.1 Locations

- **Top Side**



- **Buttom Side**

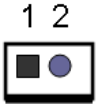


34. DDR2
35. CF1

36. JP8,JP9

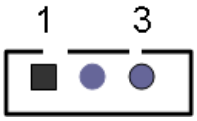
2.2 List of Connectors and Jumper Settings

2.2.1 Power input (CN4)



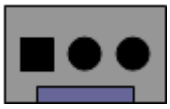
SET	SIGNAL
1	+12V
2	GND

2.2.2 ATX function connector (CN5)



SET	SIGNAL
1	GND
2	PS_ON
3	+5V_SUS

2.2.3 CPU fan (FAN1)



2.2.4 CPU select jumper (JP7)

SET	SIGNAL
SHORT	DOTHAN
OPEN	BANINES

2.2.5 PCI-104 support SERIRQ (JP6)

Note: Short this jumper in order to support SERIRQ function.

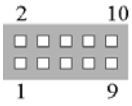
2.2.6 Standard PCI-104 connector (PCI104)

Note: When using AR-B1045, there will have interfere with SATA1 connector.

2.2.7 Standard SATA connector (SATA1)

2.2.8 44 pin PATA connector (IDE1)

2.2.9 Internal USB connector (USB2)



PIN	SIGNAL	PIN	SIGNAL
1	+5V	2	+5V
3	USB0-	4	USB1-
5	USB0+	6	USB1+
7	GND	8	GND
9	GND	10	GND

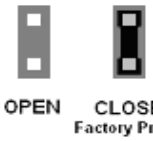
2.2.10 CF card Master/Slave select jumper (JP4)

SET	SIGNAL
SHORT	MASTER
OPEN	SLAVE

2.2.11 CMOS clear jumper (JP1)

1-2 : On-board battery
(Factory preset)
2-3 : Clear CMOS

2.2.12 Keyboard lock (J3)

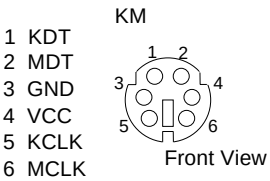


CLOSE : UNLOCK
(Factory preset)

OPEN : LOCK

2.2.13 RTC battery connector (CN1)

2.2.14 Keyboard/Mouse connector (KM1)



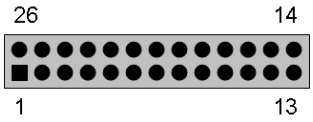
2.2.15 External USB connector (USB1)

2.2.16 GIGA LAN connector (LAN2)

2.2.17 10/100 LAN connector (LAN1)

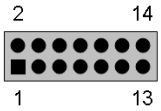
2.2.18 Standard VGA connector (VGA1)

2.2.19 DVI-D connector (DVI1)



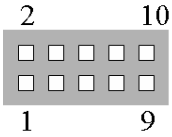
PIN	SIGNAL	PIN	SIGNAL
1	GND	26	TD0+
2	TD0-	25	GND
3	TD1+	24	TD1-
4	GND	23	TD2+
5	TD2-	22	GND
6	TCK+	21	TCK-
7	HPD	20	SCL1
8	VCC	19	SDATA1
9	RED	18	GND
10	GREEN	17	GND
11	BLUE	16	GND
12	VSYNC	15	SCL2
13	HSYNC	14	SDATA2

2.2.20 V-out connector (TVCON1)



PIN	SIGNAL	PIN	SIGNAL
1	Y-G	2	N/A
3	GND	4	N/A
5	CVBS/Pb-G	6	N/A
7	GND	8	N/A
9	C/Pr-G	10	N/A
11	GND	12	N/A
13	GND	14	N/A

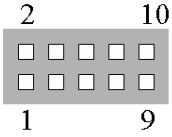
2.2.21 Internal COM2 connector (COM2)



PIN	SIGNAL	PIN	SIGNAL
1	/DCDB	2	/DSRB
3	RXDB	4	/RTSB
5	TXDB	6	/CTSB
7	/DTRB	8	/RIB
9	GND		

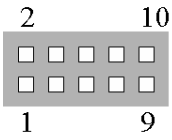
2.2.22 Stardard COM1 DB-9 connector(COM1)

2.2.23 Internal COM3 connector (COM3)



PIN	SIGNAL	PIN	SIGNAL
1	/DCDB	2	/DSRB
3	RXDB	4	/RTSB
5	TXDB	6	/CTSB
7	/DTRB	8	/RIB
9	GND		

2.2.24 Internal COM4 connector (COM4)

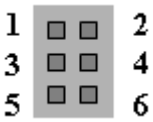


PIN	SIGNAL	PIN	SIGNAL
1	/DCDB	2	/DSRB
3	RXDB	4	/RTSB
5	TXDB	6	/CTSB
7	/DTRB	8	/RIB
9	GND		

2.2.25 System FAN (FAN2)

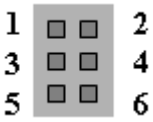
Note: The FAN will start to work when temperature over 67ºC and stop when temperature below 53ºC.

2.2.26 Switch button (J1)



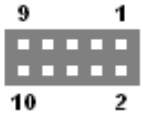
SET	SIGNAL
1-2	SPEAKER
3-4	RESET
5-6	POWER BUTTON

2.2.27 RS232/422/485 select jumper (JP2)



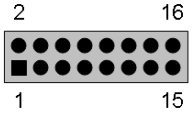
SET	SIGNAL
1-2	RS232
3-4	RS422
5-6	RS485

2.2.28 GPIO connector (GPIO1)



PIN	SIGNAL	PIN	SIGNAL
1	GPIO0	2	VCC
3	GPIO1	4	GPIO7
5	GPIO2	6	GPIO6
7	GPIO3	8	GPIO5
9	GND	10	GPIO4

2.2.29 Audio connector (AUDIO1)

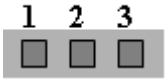


PIN	SIGNAL	PIN	SIGNAL
1	LINE OUT R	2	LINE OUT L
3	GND	4	N.A
5	LINE IN R	6	LINE IN L
7	GND	8	N.A
9	N/A	10	MIC IN
11	GND	12	GND
13	N/A	14	N/A
15	N/A	16	N/A

2.2.30 RS422/RS485 connector (J2)

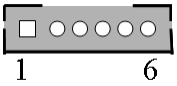
SET	SIGNAL
1	**TX+**
2	**TX-**
3	**RX+**
4	**RX-**

2.2.31 LVDS voltage select jumper (JP5)



SET	SIGNAL
1-2	**3.3V**
2-3	**5V**

2.2.32 Interver connector (CN3)



PIN	SIGNAL	PIN	SIGNAL
1	**+12V**	2	**+12V**
3	GND	4	**+5V**
5	GND	6	NC

2.2.33 LVDS connector (LVDS1)

2.2.34 DDR2 connector (DDR2SODIMM1)

2.2.35 Type II CF card connector (CN2)

2.2.36 FSB select jumper (JP8/JP9)

FSB	JP8	JP9
100MHz	**2-3**	**1-2**
133MHz	**2-3**	**2-3**

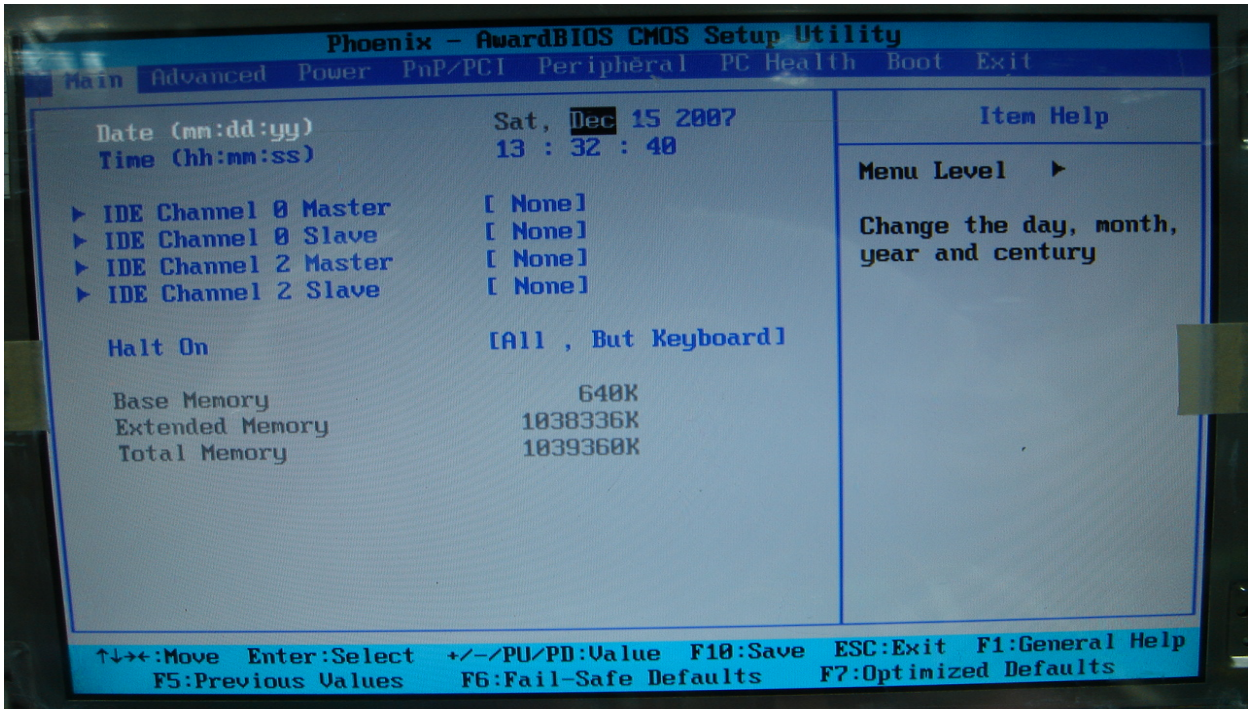
3 BIOS SETTING

This chapter describes the BIOS menu displays and explains how to perform common tasks needed to get up and running. It also gives detailed explanation of the elements found in each of the BIOS menus. The following topics are covered:

- Main Setup
- Advanced Chipset Setup
- Power Setup
- Peripherals Setup
- PnP/PCI Setup
- PC Health Setup
- Boot Setup
- Exit Setup

3.1 MAIN SETUP

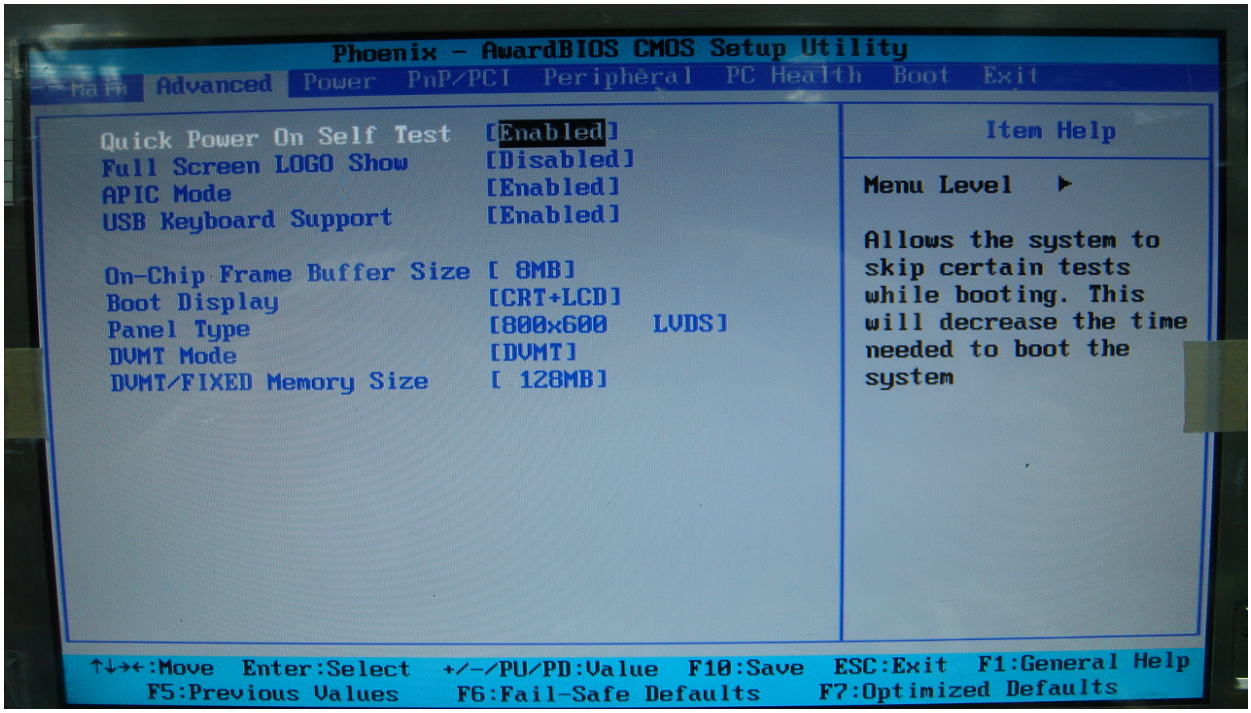
Once you enter the AwardBIOS™ CMOS Setup Utility, the Main Menu will appear on the screen. Use the arrow keys to highlight the item and then use the <Pg Up> <Pg Dn> keys to select the value you want in each item.


Phoenix - AwardBIOS CMOS Setup Utility
Main Advanced Power PnP/PCI Peripheral PC Health Boot Exit
Date (mm:dd:yy) Sat, Dec 15 2007
Time (hh:mm:ss) 13 : 32 : 40
IDE Channel 0 Master [None]
IDE Channel 0 Slave [None]
IDE Channel 2 Master [None]
IDE Channel 2 Slave [None]
Halt On [All , But Keyboard]
Base Memory 640K
Extended Memory 1038336K
Total Memory 1039360K
Item Help
Menu Level ▶
Change the day, month, year and century
↑↓→←:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5:Previous Values F6:Fail-Safe Defaults F7:Optimized Defaults

Note : Listed at the bottom of the menu are the control keys. If you need any help with the item fields, you can press the <F1> key, and it will display the relevant information.

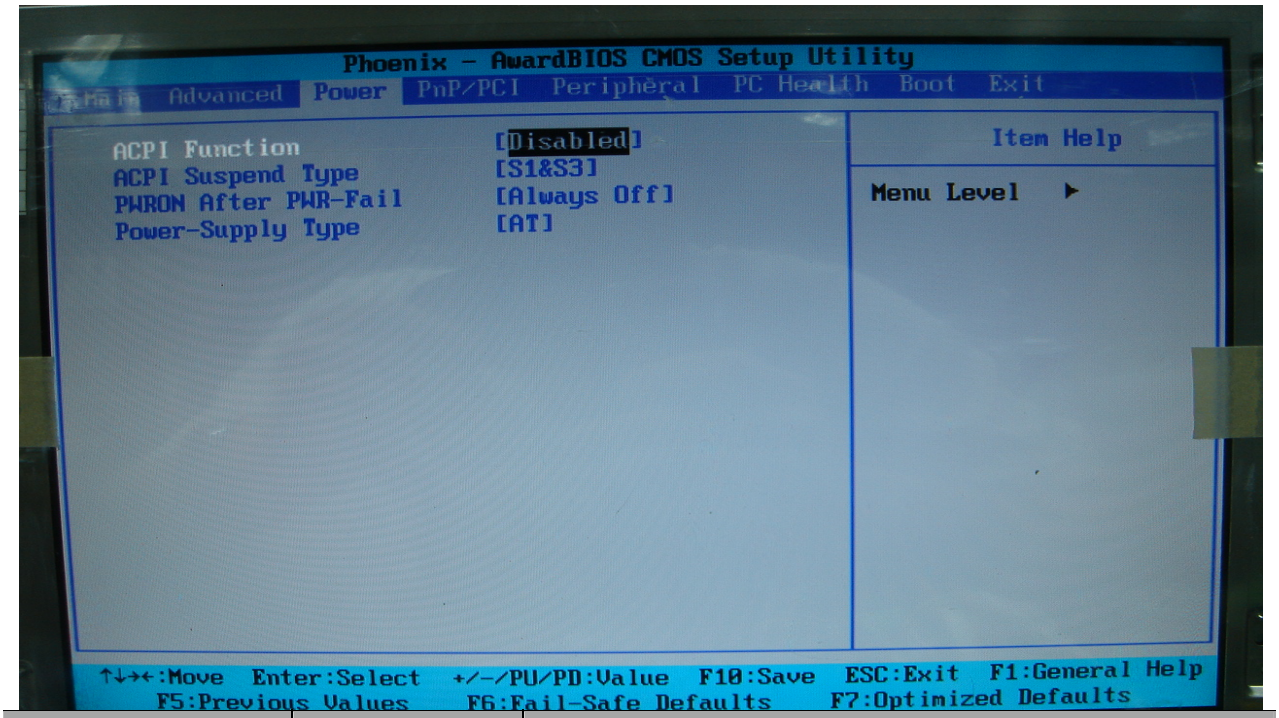
Option	Choice	Description
Date Setup	N/A	Set the system date. Note that the 'Day' automatically changes when you set the date
Time Setup	N/A	Set the system time
IDE Channel 0 Master/Slave	N/A	The onboard PCI IDE connectors provide 1 channel for connecting up to 2 IDE hard disks or other devices. The first is the "Master" and the second is "Slave", BIOS will auto-detect the IDE type.
Halt On	All Errors, No Errors, All but keyboard.	Select the situation in which you want the BIOS to stop the POST process and notify you.

3.2 Advanced Chipset Setup


Phoenix - AwardBIOS CMOS Setup Utility
Main Advanced Power PnP/PCI Peripheral PC Health Boot Exit
Quick Power On Self Test [Enabled]
Full Screen LOGO Show [Disabled]
APIC Mode [Enabled]
USB Keyboard Support [Enabled]
On-Chip Frame Buffer Size [8MB]
Boot Display [CRT+LCD]
Panel Type [800x600 LVDS]
DVMT Mode [DVMT]
DVMT/FIXED Memory Size [128MB]
Item Help
Menu Level ▶
Allows the system to skip certain tests while booting. This will decrease the time needed to boot the system
↑↓→←:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5:Previous Values F6:Fail-Safe Defaults F7:Optimized Defaults

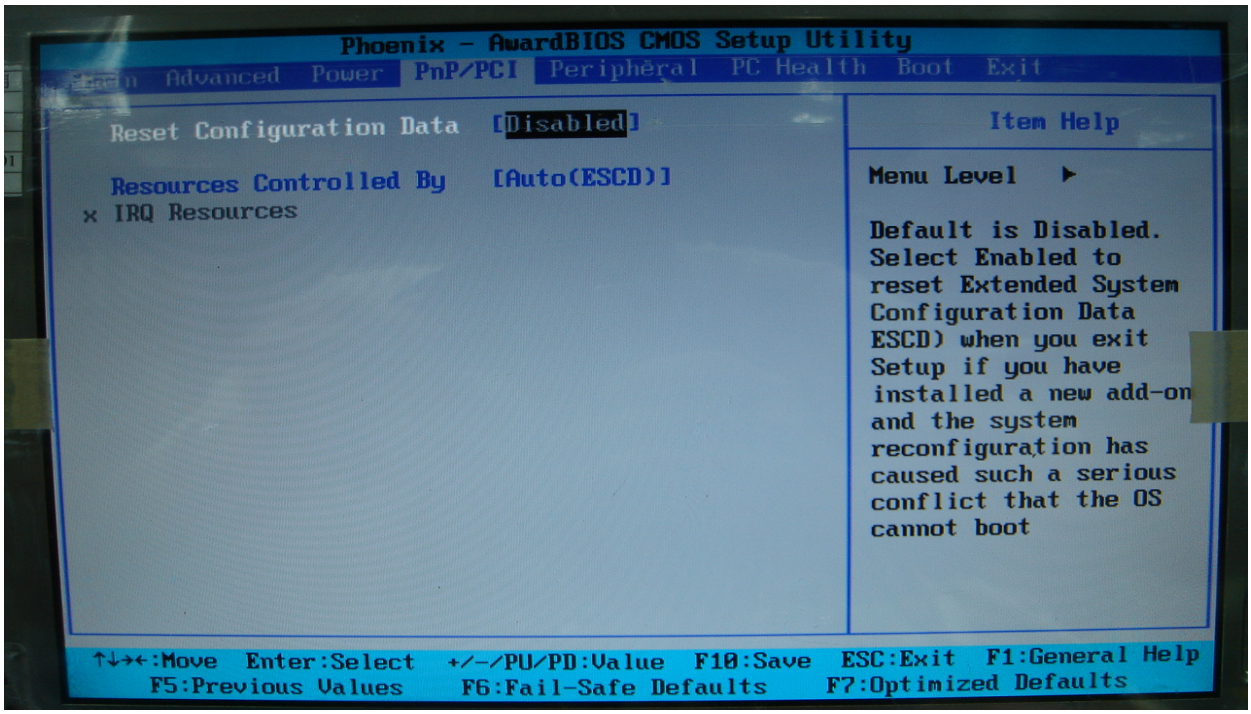
Option	Choice	Description
Quick Power On Self Test	Enabled Disabled	This category speeds up Power On Self Test (POST) after you have powered up the computer. If it is set to Enable, BIOS will shorten or skip some check items during POST.
Full Screen Logo Show	Enabled Disabled	Select *Enabled* to show the OEM full screen logo if you have add-in BIOS.
APIC Mode	Enabled Disabled	This item sets APIC(Default Disabled)
USB Keyboard Support	Enabled Disabled	Select *Enabled* if your system contains a Universal Serial Bus (USB)controller and you have a USB keyboard..
On-Chip Frame Buffer Size	1Mb 8Mb	This Item is for setting the Frame Buffer (Share system memory as display memory).
Boot Display	CRT LCD CRT+LCD TV	This Item is to set display device TV function only support on AR-B5230SD
Panel Type	800x600, 1024x768, 1280x1024	This Item can Set the LVDS panel resolution that you want
DVMT mode	FIXED DVMT Both	This item sets the mode for dynamic video memory technology (DVMT).
DVMT/FIXED Memory Size	64Mb 128Mb	This item sets the DVMT size

3.3 Power setup


Phoenix - AwardBIOS CMOS Setup Utility
Main Advanced Power PnP/PCI Peripheral PC Health Boot Exit
ACPI Function [Disabled]
ACPI Suspend Type [S1&S3]
PWRON After PWR-Fail [Always Off]
Power-Supply Type [AT]
Item Help
Menu Level ▶
↑↓→←:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5:Previous Values F6:Fail-Safe Defaults F7:Optimized Defaults

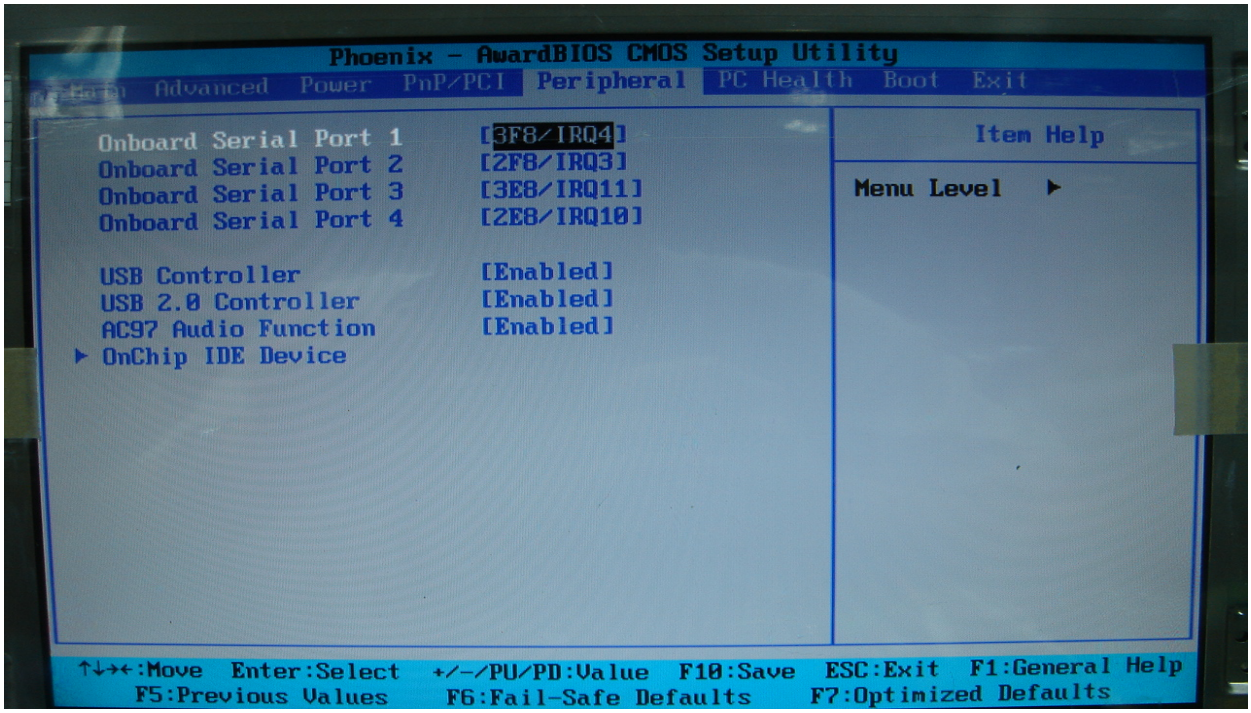
Option	Choice	Description
ACPI Function	Enabled Disabled	This item sets Advanced Configurtion and Power Interface.When ATX mode is enabled and AT mode is disabled.
ACPI Suspend Type	S1&S3 S1(POS) S3(STR)	This item sets Advanced Configurtion and Power Interface mode.It is asserted ACPI Function is enable.
PWRON After PWR-Fail	Always On Always Off Last State	This item sets the POWERON State (Default Always On).
Power-Supply Type	AT ATX	This item sets the ATX or AT POWER(Default AT).

3.4 PnP/PCI setup


Phoenix - AwardBIOS CMOS Setup Utility
Advanced Power PnP/PCI Peripheral PC Health Boot Exit
Reset Configuration Data [Disabled]
Resources Controlled By [Auto(ESCD)]
x IRQ Resources
Item Help
Menu Level ▶
Default is Disabled. Select Enabled to reset Extended System Configuration Data ESCD) when you exit Setup if you have installed a new add-on and the system reconfiguration has caused such a serious conflict that the OS cannot boot
↑↓→←:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5:Previous Values F6:Fail-Safe Defaults F7:Optimized Defaults

Option	Choice	Description
Reset Configuration Data	Enabled Disabled	Normally, you leave this field Disabled. Select Enabled to reset Extended System Configuration Data (ESCD) when you exit Setup. If you have installed a new add-on and the system reconfiguration has caused such a serious conflict, then the operating system can not boot.
Resources Controlled By	Auto(ESCD) Manual	The Award Plug and Play BIOS has the capacity to automatically configure all of the boot and Plug and Play compatible devices. However, this capability means absolutely nothing unless you are using a Plug and Play operating system such as Windows 95. If you set this field to "manual," then you may choose specific resources by going into each of the submenus.
IRQ Resources	N/A	When resources are controlled manually, assign a type to each system interrupt,depending on the type of the device that uses the interrupt

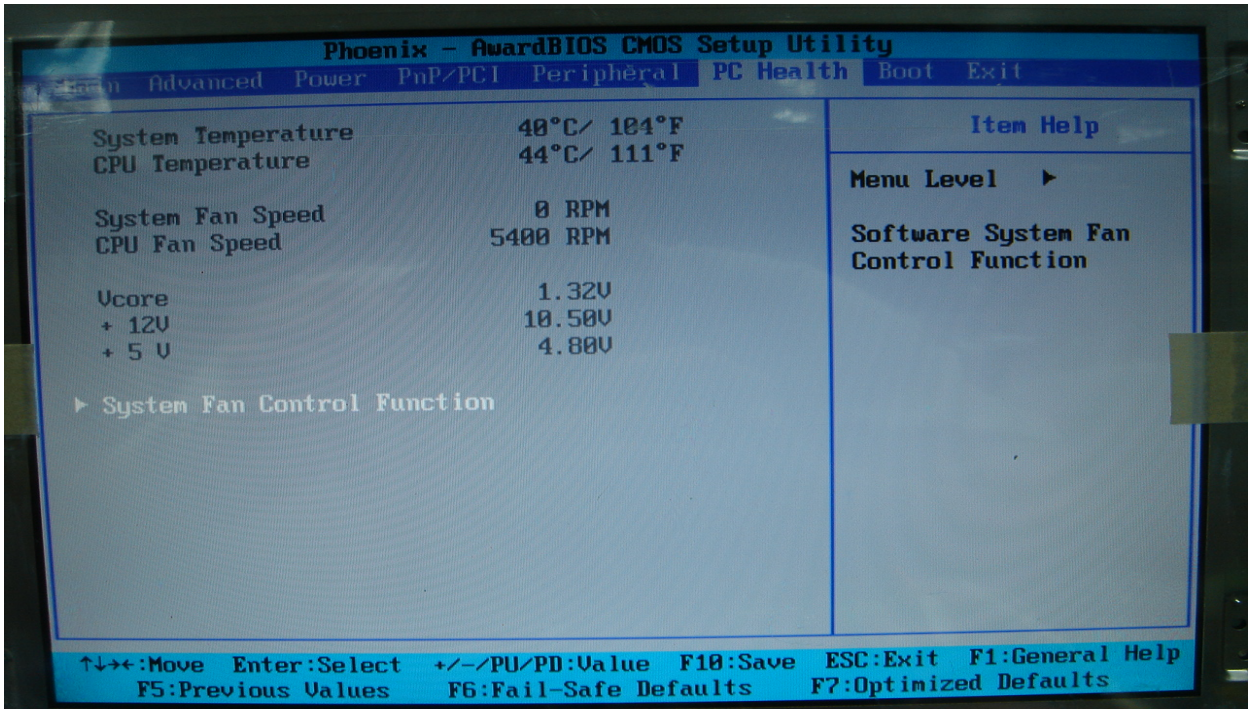
3.5 Peripherals Setup


Phoenix - AwardBIOS CMOS Setup Utility
Advanced Power PnP/PCI Peripheral PC Health Boot Exit
Onboard Serial Port 1 [3F8/IRQ4]
Onboard Serial Port 2 [2F8/IRQ3]
Onboard Serial Port 3 [3E8/IRQ11]
Onboard Serial Port 4 [2E8/IRQ10]
USB Controller [Enabled]
USB 2.0 Controller [Enabled]
AC97 Audio Function [Enabled]
OnChip IDE Device
Item Help
Menu Level ▶
↑↓→←:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5:Previous Values F6:Fail-Safe Defaults F7:Optimized Defaults

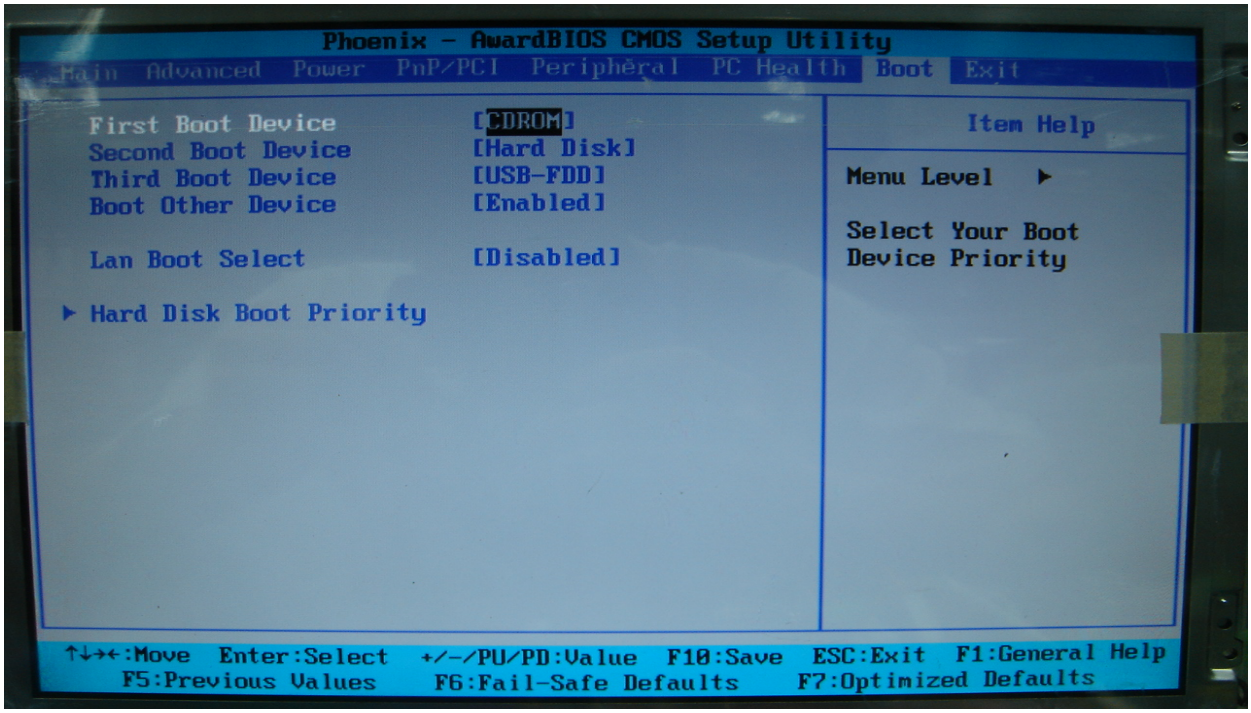
Option	Choice	Description
Onboard Serial Port 1 Onboard Serial Port 2 Onboard Serial Port 3 Onboard Serial Port 4	Serial Port 1: 3F8 / IRQ4 Serial Port 2: 2F8 / IRQ3 Serial Port 3: 3E8 / IRQ11 Serial Port 4: 2E8 / IRQ10	Select an address and the corresponding interrupt for each serial port
USB Controller	Enabled Disabled	Select *Enabled* if your system contains a Universal Serial Bus (USB)controller and you have USB peripherals
USB 2.0 Controller	Enabled Disabled	Select *Enabled* if your system contains a Universal Serial Bus (USB) 2.0 controller and you have USB peripherals
AC97 Auido Function	Enabled Disabled Audio/Modem	This item allows you to decide to enable/disable AC97 Audio
Onchip IDE DEVICE	Enabled Disabled	The integrated peripheral controller contains an IDE interface with support for two IDE channels. Select *Enabled* to activate each channel separately.

3.6 PC Health Setup

This section shows the parameters in determining the PC Health Status. These parameters include temperatures, fan speeds, and voltages.

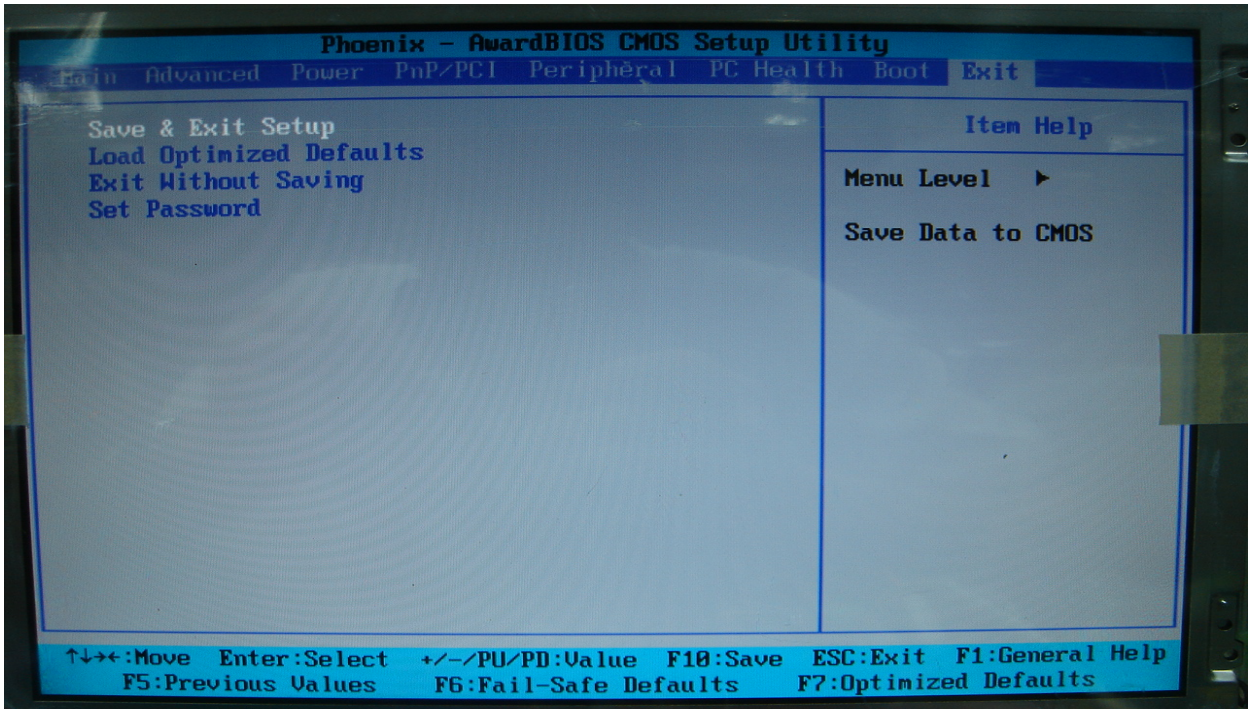

Phoenix - AwardBIOS CMOS Setup Utility
Advanced Power PnP/PCI Peripheral PC Health Boot Exit
System Temperature 40°C/ 104°F
CPU Temperature 44°C/ 111°F
System Fan Speed 0 RPM
CPU Fan Speed 5400 RPM
Vcore 1.32V
+ 12V 10.50V
+ 5 V 4.80V
System Fan Control Function
Item Help
Menu Level ▶
Software System Fan Control Function
↑↓→←:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5:Previous Values F6:Fail-Safe Defaults F7:Optimized Defaults

3.7 Boot setup


Phoenix - AwardBIOS CMOS Setup Utility
Main Advanced Power PnP/PCI Peripheral PC Health Boot Exit
First Boot Device [CDROM]
Second Boot Device [Hard Disk]
Third Boot Device [USB-FDD]
Boot Other Device [Enabled]
Lan Boot Select [Disabled]
Hard Disk Boot Priority
Item Help
Menu Level ▶
Select Your Boot Device Priority
↑↓→←:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5:Previous Values F6:Fail-Safe Defaults F7:Optimized Defaults

Option	Choice	Description
First / Second / Third Boot Device/Other Boot Device	Hard Disk CDROM USB-FDD USB-CDROM LAN Disabled	The BIOS attempts to load the operating system from the devices in the sequence selected in these items.
LAN Boot Select	Enabled Disabled	These fields allow the system to search for an OS from LAN
Hard Disk Boot Priority	N/A	These fields set the Boot Priority for each Hard Disk

3.8 Exit SETUP


Phoenix - AwardBIOS CMOS Setup Utility
Main Advanced Power PnP/PCI Peripheral PC Health Boot Exit
Save & Exit Setup
Load Optimized Defaults
Exit Without Saving
Set Password
Item Help
Menu Level ▶
Save Data to CMOS
↑↓→←:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5:Previous Values F6:Fail-Safe Defaults F7:Optimized Defaults

Option	Choice	Description
Save & Exit Setup	Pressing <Enter> on this item for confirmation: Save to CMOS and EXIT (Y/N)? Y	Press "Y" to store the selections made in the menus in CMOS – a special section of memory that stays on after you turn your system off. The next time you boot your computer, the BIOS configures your system according to the Setup selections stored in CMOS. After saving the values the system is restarted again
Load Optimized Defaults	When you press <Enter> on this item you get a confirmation dialog box with a message like this: Load Optimized Defaults (Y/N) ? N	Press 'Y' to load the default values that are factory-set for optimal-performance system operations.
Exit Without Saving	Pressing <Enter> on this item for confirmation: Quit without saving (Y/N)? Y	This allows you to exit Setup without storing any changes in CMOS. The previous selections remain in effect. This shall exit the Setup utility and restart your computer.
Set Password	Pressing <Enter> on this item for confirmation: ENTER PASSWORD:	When a password has been enabled, you will be prompted to enter your password every time you try to enter Setup. This prevents unauthorized persons from changing any part of your system configuration.

		Type the password, up to eight characters in length, and press <Enter>. The password typed now will clear any previous password from the CMOS memory. You will be asked to confirm the password. Type the password again and press <Enter>. You may also press <Esc> to abort the selection and not enter a password. To disable a password, just press <Enter> when you are prompted to enter the password. A message will confirm that the password will be disabled. Once the password is disabled, the system will boot and you can enter Setup freely.

ATX and AT POWER CONFIGURATION

J1 (SPEAKER, RESET, and POWER BUTTON JUMPER Setting)

PIN	SIGNAL	
1-2	SPEAKER	
3-4	RESET	
5-6	POWER BUTTON	
	ATX	AT
	PUSH BUTTON SWITCH	CLOSE

When using an **AT power supply** in your system, the pin5-6 of header **J1** must be shorted. If using an **ATX power supply** in the system, the pin5-6 of header **J1** should connect to a **Push-Button-Switch**.

NOTE: When a system using AT power supply, the monitor will not display any message and the system will not auto-shut down after soft-off. In this case, please push the power switch to cut the system power off.